|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Test | DE | EBLSHADE | ADELI | NDE | MABC | TLBO | GOTLBO | STLBO | PSO | IJAYA | ISCA | NNA | CWOA | WW |
| I01 | | | | | | | | | | | | | | |
| Friedman | 8.88 | **2.69** | **2.24** | 8.76 | 9.98 | 4.02 | 9.02 | **2.45** | 10.59 | 8.62 | 9.56 | 8.07 | 8.98 | 11.14 |
| FriedmanAligned | 6.6946 | 5.448 | **5.2096** | 6.1488 | 8.2482 | **5.2606** | 8.2538 | **5.209** | 9.1678 | 6.6182 | 7.847 | 6.6682 | 7.8142 | 9.552 |
| Quade | 8.332 | **2.921** | **2.091** | 8.318 | 9.632 | 4.337 | 9.587 | **2.568** | 11 | 8.464 | 9.183 | 8.156 | 9.323 | 11.09 |
| n1 | | | | | | | | | | | | | | |
| Friedman | 7.16 | **2.61** | **2.22** | 6.42 | 9.32 | 3.53 | 9.66 | **2.4** | 10.99 | 7.18 | 9.98 | 11.1 | 11.67 | 10.76 |
| FriedmanAligned | 5.5812 | **4.6526** | **4.57** | 5.3616 | 6.7176 | 4.7402 | 8.3252 | **4.57** | 9.5062 | 5.6448 | 8.5928 | 10.701 | 10.971 | 8.2052 |
| Quade | 6.952 | **2.835** | **2.211** | 6.122 | 8.978 | 3.66 | 9.123 | **2.415** | 11.65 | 7.343 | 9.886 | 11.23 | 11.96 | 10.64 |
| Rsh1 | | | | | | | | | | | | | | |
| Friedman | 7.3 | **2.37** | **2.26** | 6.24 | 8.46 | 3.51 | 11.36 | **2.34** | 11.2 | 7.22 | 10.98 | 10.94 | 10.84 | 9.98 |
| FriedmanAligned | 6.4928 | **5.73** | **5.6874** | 6.154 | 6.6908 | 5.806 | 8.2928 | **5.6874** | 9.4252 | 6.4352 | 8.094 | 8.308 | 7.8748 | 7.4616 |
| Quade | 7.162 | **2.367** | **2.358** | 6.113 | 8.725 | 3.444 | 11.05 | **2.311** | 11.48 | 7.213 | 11.21 | 11.08 | 10.71 | 9.781 |
| I02 | | | | | | | | | | | | | | |
| Friedman | 9.62 | **2.78** | **2.29** | 7.98 | 8.94 | 4.14 | 8.96 | **2.49** | 11.46 | 9.6 | 8.96 | 9.16 | 9.45 | 9.17 |
| FriedmanAligned | 8.6488 | **5.008** | **4.8066** | 6.8924 | 8.1108 | 5.2746 | 7.5304 | **4.808** | 9.6988 | 7.4688 | 7.6324 | 7.6628 | 7.9578 | 6.6398 |
| Quade | 9.531 | **2.999** | **2.227** | 8.038 | 8.985 | 4.273 | 8.831 | **2.375** | 11.78 | 9.843 | 8.599 | 8.987 | 9.276 | 9.257 |
| n2 | | | | | | | | | | | | | | |
| Friedman | 7.6 | **2.41** | **2.31** | 5.64 | 8.1 | 3.66 | 9.74 | **2.46** | 11.44 | 7.68 | 9.1 | 10.72 | 10.97 | 13.17 |
| FriedmanAligned | 5.8492 | **3.2542** | **3.1452** | 4.3508 | 7.4456 | 3.433 | 9.0888 | **3.1452** | 11.052 | 5.9336 | 8.3616 | 10.019 | 10.405 | 12.657 |
| Quade | 7.642 | **2.454** | **2.311** | 5.532 | 8.369 | 3.533 | 9.656 | **2.572** | 11.54 | 7.591 | 8.989 | 10.71 | 10.97 | 13.14 |
| Rsh2 | | | | | | | | | | | | | | |
| Friedman | 7.12 | **2.72** | **2.28** | 8.16 | 10.16 | 4.21 | 9.49 | **2.55** | 11.03 | 7.44 | 9.14 | 9.78 | 10.58 | 10.34 |
| FriedmanAligned | 6.6824 | **4.9374** | **4.5922** | 7.7156 | 8.7348 | 5.6464 | 7.4238 | **4.5928** | 9.4446 | 6.7688 | 7.3892 | 7.6904 | 8.544 | 7.9776 |
| Quade | 6.956 | **3.071** | **2.309** | 8.925 | 10.21 | 4.462 | 9.142 | **2.491** | 11.34 | 7.465 | 8.784 | 9.207 | 10.54 | 10.1 |
| Rs | | | | | | | | | | | | | | |
| Friedman | 7.8 | **2.5** | **2.31** | 6.28 | 8.68 | 3.75 | 9.34 | **2.38** | 12.62 | 9.22 | 10.1 | 10.38 | 9.62 | 10.02 |
| FriedmanAligned | 7.3584 | **2.416** | **1.9942** | 5.4188 | 8.0508 | 2.7928 | 8.7316 | **1.995** | 11.782 | 8.8188 | 9.974 | 10.33 | 8.9052 | 9.5716 |
| Quade | 7.349 | **2.553** | **2.359** | 6.479 | 8.252 | 3.846 | 9.004 | **2.394** | 13.41 | 9.028 | 10.04 | 10.35 | 9.766 | 10.18 |
| Iph | | | | | | | | | | | | | | |
| Friedman | 7.3 | **2.4** | **2.21** | 6.14 | 9.02 | 3.72 | 11.34 | **2.39** | 11.72 | 6.88 | 10.56 | 10.62 | 10.72 | 9.98 |
| FriedmanAligned | 5.4048 | **4.8034** | **4.7652** | 5.1116 | 6.6088 | 4.8478 | 9.6464 | **4.7652** | 10.504 | 5.3224 | 8.428 | 9.0548 | 9.9436 | 8.934 |
| Quade | 7.083 | **2.399** | **2.293** | 6.202 | 8.682 | 3.905 | 11.09 | **2.331** | 12.19 | 6.56 | 10.54 | 10.61 | 11.13 | 9.974 |
| rmsre | | | | | | | | | | | | | | |
| Friedman | 7.92 | **2.51** | **2.28** | 5.03 | 8.56 | 3.26 | 10.7 | **2.28** | 9.74 | 6.66 | 11.32 | 11.38 | 11.5 | 11.86 |
| FriedmanAligned | 5.7828 | 3.3922 | **3.3672** | 3.9428 | 7.2028 | **3.3874** | 9.8028 | **3.3672** | 8.9676 | 4.422 | 11.033 | 11.163 | 10.886 | 11.423 |
| Quade | 7.93 | **2.449** | **2.281** | 5.009 | 8.478 | 3.272 | 10.6 | **2.281** | 9.312 | 6.623 | 11.92 | 11.75 | 11.59 | 11.51 |
| complex | | | | | | | | | | | | | | |
| Friedman | 7.4 | **2** | **3.55** | 6.5 | 8.3 | 3.75 | 9.6 | **3.7** | 10.85 | 8.3 | 9.3 | 9.7 | 10.9 | 11.15 |
| FriedmanAligned | 7.23 | **4.165** | 5.305 | 5.36 | 7.84 | **5.295** | 7.58 | **4.045** | 8.685 | 7.34 | 7.05 | 9.15 | 9.59 | 10.065 |
| Quade | 7.945 | **2.409** | 4.364 | 7.073 | 8.945 | **4.355** | 8.745 | **3.782** | 10.31 | 8.891 | 8.964 | 8.673 | 9.636 | 10.91 |
| ideal | | | | | | | | | | | | | | |
| Friedman | 7.813 | 3.863 | **2.192** | 4.846 | 8.857 | **2.61** | 9.538 | **2.753** | 11.2 | 6.769 | 10.97 | 11.55 | 11.32 | 10.73 |
| FriedmanAligned | 6.1805 | 4.5834 | **4.3789** | 4.7217 | 7.1542 | **4.3777** | 8.004 | **4.2259** | 10.503 | 5.8501 | 9.7739 | 9.2777 | 9.743 | 9.3023 |
| Quade | 8.056 | 3.931 | **2.336** | 4.956 | 8.895 | **2.71** | 9.135 | **2.812** | 11.88 | 6.855 | 10.63 | 11.11 | 11.42 | 10.27 |